

**ADDENDUM TO THE FACT SHEET  
FOR NPDES  
PERMIT NO. WA-000370-1**

**Permit Modification**

**I. GENERAL INFORMATION**

**SANDVIK SPECIAL METALS, LLC.**

**Facility Address:**

**43507 PIERT ROAD  
KENNEWICK, WA 99337-7745**

**Mailing Address:**

**PO BOX 6027  
KENNEWICK, WA 99336-0027**

**II. PERMIT MODIFICATION REVIEW**

The purpose of this permit modification is to remove the Total Suspended Solids (TSS) effluent limits and monitoring requirements from the current NPDES Permit. The TSS limits were included in the current and previous permits due to an apparent misinterpretation of the Federal categorical treatment standards. A request for permit modification was submitted by Sandvik Special Metals (Sandvik) to the Department of Ecology (Department) on July 1, 2005.

The Permittee has made the following requests for the permit modification:

- Requests that the TSS effluent limits be removed from the permit; and,
- Requests that the TSS monitoring requirements be removed from the permit.

In 1986 the company requested a variance from the BPT standards. The company argued that the products it made, and the processes used to make them, were fundamentally different from the products and processes EPA used to promulgate the BPT treatment standards. Federal regulations contain provisions in which a Permittee can request a variance from the categorical effluent guidelines for "fundamentally different factors" (40 CFR 122.21(m) and 125.30, 31 and 32). Sandvik's request for a variance was received by EPA's Region 10 office in May 1986, but was not acted upon because of the lack of input from Ecology. Sandvik's request for a variance and this permit modification are related,

in that the rationale for both and some of the supporting information are the same. However, the purpose of this permit modification is more limited and focused: removal of the TSS effluent limits that resulted from an apparent misinterpretation of the regulations. Only EPA can grant a variance for fundamentally different factors.

### **Background**

Sandvik has operated a specialty metals fabrication facility in Finley, WA since 1967. The facility has been under permit since the start of operation. Sandvik's wastewater discharge permits have had production-based TSS effluent limits since at least the 1993 permit. The documentation explaining the rationale for including TSS limits in the permit is not available. The permit issued in 1998 reduced the mass-loading limits by more than one-half because of cuts in production. The reduction of the limits has caused compliance problems for the company since 1998.

Sandvik's onsite treatment facility is described in a recent engineering report as a lime and settle process that utilizes hydrated lime and sulfuric acid for pH control. Alum and ferrous sulfate are added to further reduce fluoride levels. An anionic polymer is added to aid with settling of suspended solids. Solids are settled out in an inclined plate settling clarifier (*Total Suspended Solids Reduction Engineering Report*, May 2004).

In 2003 the permit was reissued with a focus on resolving the TSS issue. The existing permit's Special Condition S1.A. - Discharge Limitations, contains interim and final effluent limitations for TSS. In addition, S2.A. - Monitoring Requirements, requires weekly monitoring of the discharge for TSS. Finally, S6. - Compliance Schedule for TSS Mitigation, requires compliance with the categorical Best Practicable Control Technology Currently Available (BPT) standards contained in Title 40 Code of Federal Regulations, Subparts 471.61 (titanium) and 471.91 (zirconium).

Sandvik has argued since 1986 that the BPT treatment standards should not be applicable to its wastewater treatment facility because the facility was designed and constructed to comply with the more stringent Best Available Technology Economically Achievable (BAT) standards. The BPT standards address toxic pollutants, TSS and Oil and Grease; the BAT standards address toxics only, but can be as much as ten times more stringent than the BPT standards for some process wastewater streams. A comparison of the BPT and BAT effluent guidelines applicable to one of Sandvik's process wastewater streams is as follows:

(q) *Alkaline cleaning rinse.*

## Subpart F--BPT

Pollutant or pollutant property	Maximum for any 1 day	Maximum for average	monthly
mg/off-kg (pounds per million off- pounds) of titanium alkaline cleaned			
Cyanide.....			0.801 0.331
Lead.....	1.16	0.552	
Zinc.....	4.03	1.69	
Ammonia.....	370	160	
Fluoride.....	164	72.9	
Oil and grease.....	55.2	33.1	
TSS.....	113	53.8	
pH.....	(1\)	(1\)	

\1\Within the range of 7.5 to 10.0 at all times.

(q) *Alkaline cleaning rinse.*

## Subpart F--BAT

Pollutant or pollutant property	Maximum for any 1 day	Maximum for average	monthly
	mg/off-kg (pounds per million off- pounds) of titanium alkaline cleaned		
Cyanide.....	0.080	0.033	
Lead.....	0.116	0.055	
Zinc.....	0.403	0.169	
Ammonia.....	36.8	16.2	
Fluoride.....	16.4	7.29	

## Analysis and Discussion

This section of the addendum contains an analysis and discussion of the technical basis of the BPT and BAT technological standards of performance. The purpose of this discussion is to determine whether Sandvik treatment facility complies with the intent of the BAT performance standard for TSS. The permit writer attempted to determine what constitutes the BAT performance standard from the *Final Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Forming and Metal Powders* document, volume III, dated September 1986. The following paragraphs draw heavily from Sections IX (BPT) and X (BAT) of the development document and an earlier draft of the document (1984).

BAT effluent guidelines are generally understood to address toxics only; however, Section X was reviewed for any explanation of why TSS was not carried over from the BPT guidelines. The only reference to this issue in the section acknowledges that "the conventional pollutant parameters oil and grease, total suspended solids, and pH are not regulated under BAT" (1986, p. 1768). Taken literally, this sentence indicates that technology-based effluent limits for these parameters are not applicable to the BAT effluent limit guidelines. The text goes on to state that these parameters would be addressed in the Best Conventional Technology (BCT) effluent guidelines, to be promulgated by EPA (1986, p. 1768). The BCT standards were promulgated, but apparently were never adopted, because the Federal regulations (40 CFR Part 471) do not contain BCT effluent guidelines for the nonferrous metals point source category.

Next, the development document was reviewed to determine the treatment processes that constitute the BAT technological standard (1986, pp. 1758 and 1764). The purpose of this review was to determine whether the technological standard requires application of a filtration process, which would further reduce concentrations of TSS in the discharge. The document states that, for the titanium- and zirconium-hafnium-forming subcategories, the following treatment processes (identified as Option 2) were selected as the basis for the BAT effluent guidelines:

- Oil skimming,
- Lime and settle (chemical precipitation of metals followed by sedimentation),
- pH adjustment,
- Contact cooling water recycle through cooling towers or holding tanks,
- Air pollution control scrubber liquor recycle. Countercurrent cascade rinsing or other water efficient methods applied to surface treatment rinses and alkaline cleaning rinses.
- Use of periodic batch discharges or decreased flow rate for molten salt rinse, and,
- Recycle of equipment cleaning wastewater, tumbling and burnishing wastewater, and other wastewater streams through holding tanks with provision for suspended solids removal, if necessary.

In addition, the list contains several optional treatment processes, such as iron co precipitation and ammonia steam stripping, used to further reduce concentrations of metals and ammonia, respectively. However, concentrations of these discharge constituents are within the permit limits, so application of these treatment processes would not be warranted.

Sandvik's production processes and its onsite wastewater treatment facility were designed and built, or later modified, to incorporate the above BAT requirements.

For example, the company utilizes counter-current cascade rinsing, as required by the technological standards. Filtration is explicitly required for four of the nine metals-forming subcategories, but not for titanium or zirconium-hafnium forming facilities.

Next, the performance of Sandvik's treatment system effectiveness at reducing TSS in the discharge was compared with other metal-forming facilities that use the lime and settle technologies. Table VII-9 in an earlier (1984) version of the development document contains summary data of TSS discharged from lime and settle treatment systems. These data are the basis of the BPT TSS effluent limits guidelines. Unfortunately, the number of facilities from which the data were derived could not be ascertained from the document text. These industry profile data are presented in the following table along with characterization data from the fact sheet associated with Sandvik's current permit. Sandvik's data reflect operations from November 2000 to November 2002. Only the maximum daily and 30-day values are directly comparable, but the other values are useful for context.

**Comparison of Industry-wide Effluent TSS with Sandvik Effluent TSS, in mg/L,  
Using the Lime and Settle Treatment Train**

<b>Time Frame</b>	<b>EPA Industry-wide Summary</b>	<b>Sandvik 2-year Effluent Characterization</b>
Maximum Daily	41.0	21.6
10-day Average	19.5	--
30-day Average	15.5	16.5
Mean	12.0	6.1

Although the time frames don't correspond exactly, the data show that TSS concentrations in Sandvik's discharge are generally better than the industry-wide performance. The two data sets are comparable because (1) the development document was written at approximately the same time as Sandvik's treatment system was designed and built (mid-1980's), and, (2) Sandvik utilizes one of the settling technologies recommended in the development document, the inclined plate settling clarifier. This

type of clarifier is described as achieving 'higher removal efficiencies than conventional clarifiers' (1984, p. 582).

In summary, Sandvik's treatment system appears to fulfill the expectations of the Federal technology-based performance standards. EPA could have required filtration for facilities in the titanium and zirconium-hafnium subcategories, as it did with other subcategories, but it did not. It could be argued from an engineering perspective, that in removing metals to comply with the more stringent BAT standards, more TSS would be generated as a byproduct of the lime and settle treatment process.

### **Water Quality Considerations**

Although the State's Surface Water Quality Standards (Chapter 173-201A WAC) do not contain numerical criteria for TSS, an assessment of the impacts of TSS in the discharge to the Columbia River water quality is discussed in the following paragraphs.

A description of the TSS in the discharge contained in the 2004 engineering report determined it to be made up of free calcium ions ( $\text{Ca}^{2+}$ ), calcium carbonate ( $\text{CaCO}_3$ ), calcium bicarbonate ( $\text{Ca}(\text{HCO}_3)_2$ ), or other noncarbonate species such as calcium nitrate, calcium sulfate, etc. It is the determination of the Department's Central Regional Office water quality engineers that the constituents of the TSS in the discharge are chemically inert and do not pose any toxic threat to the receiving water or the aquatic life in the river.

In the context of ambient TSS concentrations in the river, monthly monitoring data were reviewed from the Department's station at Umatilla, OR. The data were for the period from October 2002 through September 2004. During this time, TSS concentrations ranged from 1 mg/L to 15 mg/L, with an average of 4.5 mg/L. In comparison, Sandvik's long term average TSS concentration is 6.1 mg/L, a slight increase over background. In context, Sandvik's TSS concentrations are approximately 1/5<sup>th</sup> of the secondary treatment standards applied to municipal wastewater treatment plants.

The appropriate water quality parameter applicable to the discharge is turbidity. The turbidity criterion for Class A waters is as follows: Turbidity shall not exceed 5 NTU's over background turbidity when the background turbidity is 50 NTU's or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU (WAC 173-201A-030(1)(c)(vi)).

Sandvik's discharge has not been characterized for turbidity. Interestingly, a sample collected from the Columbia River at Umatilla February 5, 2003 was sampled for both TSS and turbidity. The TSS concentration was 15 mg/L, nearly the maximum monthly average concentration found in Sandvik's 2-year characterization (see above table). The corresponding turbidity was 13 NTU's. While all suspended solids do not have the exact same physical and chemical properties, this comparison may provide some context.

The point of compliance for the turbidity criterion is at the edge of the chronic mixing zone. Given the chronic dilution factor in the existing permit of 470, and the relatively low concentrations of TSS in the discharge, it is the best professional judgment of the Department that there exists no reasonable potential for turbidity in the discharge to exceed the turbidity criterion. Therefore, this permit modification does not establish turbidity effluent limits, but does require monthly monitoring for turbidity. The Department will use these data at permit renewal to assess the need for turbidity effluent limits.

### **Backsliding Considerations and Final Determination**

Federal regulations require that reissued permits must contain conditions at least as stringent as those in the previous permit (40 CFR 122.44(l)). Inclusion of less stringent conditions is considering 'backsliding'. However, there are exceptions to the rule, detailed in (40 CFR 122.44(l)(i)). The provision relevant to Sandvik's situation states: The Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit (40 CFR 122.44(l)(i)(B)(2)).

It is the determination of the Department that, for the reasons stated above, a misinterpretation of the regulations resulted in inappropriately applying the BPT TSS effluent limit guidelines to a treatment system built to a much higher BAT technological standard. Furthermore, it is the determination of the Department that, for the reasons stated above, the small amount of TSS in Sandvik's discharge does not constitute an adverse impact to the receiving water and does not warrant further effluent limits or monitoring for TSS.

The Permittee is granted these revision based on the following considerations:

- That the Permittee is in compliance with all other terms, conditions, requirements and schedules of compliance of the current permit;
- That the discharge is consistent with applicable effluent standards and limitations, water quality standards, and other legally applicable requirements listed in Chapter 173-201A WAC.

### **III. PERMIT MODIFICATION**

This fact sheet addendum accompanies the permit, which is to be modified for the Sandvik Special Metals facility to remove TSS effluent limits and monitoring from the existing permit.

These requests are granted. The following pages contain the revised discharge limitations and monitoring schedule. In addition, Special Condition S6, the Compliance Schedule for TSS Mitigation, is considered fulfilled by the Department. Finally, the Permittee is required to sample the discharge for turbidity on a monthly basis.

## **S1. DISCHARGE LIMITATIONS**

### **A. Process Wastewater and Combined Non-Contact Cooling Water Discharges**

All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

Beginning on **August 1, 2003** and lasting through **July 31, 2008**, the Permittee is authorized to discharge treated wastewater to the Columbia River at the permitted location subject to complying with the following limitations:

<b>DISCHARGE LIMITATIONS</b>		
<b>Parameter</b>	<b>Average Monthly <sup>1</sup></b>	<b>Maximum Daily <sup>2</sup></b>
<b>Process Wastewater</b>	<b>lbs/Day</b>	<b>lbs/Day</b>
Chromium	0.0094	0.0233
Copper	0.0523	0.0995
Fluoride	1.3836	3.1182
Lead	0.01047	0.0220
Nickel	0.0645	0.0977
Zinc	0.0320	0.0765
Cyanide	0.0063	0.0143
<b>Combined Discharge</b>	<b>(Process wastewater and Non-contact Cooling Water).</b>	
Ammonia	3.07	6.98
pH	Between 7.0 and 10.0 at all times.	

<sup>1</sup> The average monthly effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

<sup>2</sup> The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in



units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.

## S2. MONITORING REQUIREMENTS

### A. Monitoring Schedule

The Permittee shall monitor in accordance with the following schedule:

Category	Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
Process Wastewater	Lead	lbs/Day	Pump pit	Once per month	Calculation <sup>1</sup>
"	Nickel	lbs/Day	Pump pit	Once per month	"
"	Chromium	lbs/Day	Pump pit	Once per month	"
"	Copper	lbs/Day	Pump pit	Once per month	"
"	Zinc	lbs/Day	Pump pit	2 X per month <sup>2</sup>	"
"	Fluoride	lbs/Day	Pump pit	"	"
"	Cyanide	lbs/Day	Pump pit	Twice per year	"
Combined Discharge	Flow	MGD	Over-the-dike pit	Daily	Metered
"	pH	Standard Units	Over-the-dike pit	Continuous <sup>3</sup>	Metered
"	Temperature	Degree Celsius	Over-the-dike pit	Continuous	Metered
"	Ammonia	mg/L & lbs/day	Over-the-dike pit	Weekly	24 hour composite <sup>4</sup> & calculation
"	Nitrate-Nitrogen	mg/L & lbs/day	Over-the-dike pit	Monthly	"
"	Turbidity	NTU's	Over-the-dike pit	Monthly	Grab <sup>5</sup>
"	Hardness	mg/L	Over-the-dike pit	Monthly	Grab
"	Ammonia Toxicity	Ammonia Toxicity Evaluation Report	Over the dike pit	To be Determined	"

<sup>1</sup> "Calculation" means calculated using the respective sample's concentration and Total Flow (mg/L x flow in MGD x 8.34)

<sup>2</sup> "2x per month" means two samples collected in one month collected no less than 14 days apart.

<sup>3</sup> “Continuous” means uninterrupted - except for brief lengths of time for calibration, power failure, or for unanticipated equipment repair or maintenance.

<sup>4</sup> “24-hr. composite” means a series of, at least, four (4) individual samples collected over a 24-hour period at selected intervals based on an increment of either flow or time, and combined into a single container to be subsequently analyzed as one sample.

<sup>5</sup> “Grab” means an individual sample collected in less than fifteen (15) minutes.

<sup>6</sup> “2 in permit term” means the Permittee shall conduct wet testing once in summer and once in the fall prior to permit renewal following implementation of TSS mitigation procedures and completion of Phase II ammonia toxicity screening.

#### **S6. COMPLIANCE SCHEDULE FOR TSS MITIGATION**

The Department considers this Special Condition to be fulfilled.

Other existing Permit requirements, including monitoring requirements are not being changed. The existing fact sheet adequately addresses conditions and issues at the facility at the time the current Permit was issued. The Department has not received any information during the current Permit term indicating environmental impacts from the discharge were overlooked.

#### **IV. RECOMMENDATION FOR PERMIT MODIFICATION**

The Department proposes that this Permit be modified for the remainder of the current permit cycle ending **July 31, 2008**.

## **APPENDIX A -- PUBLIC INVOLVEMENT INFORMATION**

The Department has tentatively determined to modify the permit for the applicant listed on page 1 of this fact sheet addendum. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet addendum.

The Department will publish a Public Notice of Draft (PNOD) on September 16, 2005, in the Tri City Herald to inform the public that fact sheet addendum is available for review. Interested persons are invited to submit written comments regarding the modified permit. The fact sheet addendum and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Central Regional Office  
15 West Yakima Avenue, Suite 200  
Yakima, WA 98902

Any interested party may comment on the modified permit or request a public hearing on this modified permit within the 30 day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the modified permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit modification will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit modification.

The Department will consider all comments received within 30 days from the date of public notice of draft modification indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

This fact sheet addendum and the proposed permit modification were written by Jim LaSpina.

**APPENDIX B -- RESPONSE TO COMMENTS**

No comments were received by the Department of Ecology.